

Amendment to the Claims

The following listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims

1-33. (Cancelled)

34. (Currently amended) A composition comprising:

dead *E. coli* comprising at least one modified allergen whose amino acid sequence is identical to that of a wild-type allergen, except that the modified allergen has at least one mutation in an IgE site such that the modified allergen has a reduced ability to bind to or cross-link IgE as compared with the wild-type allergen, wherein the modified allergen is encapsulated inside the dead *E. coli*, wherein the wild-type protein allergen is selected from the group consisting of:

Ambrosia artemisiifolia (short ragweed) antigen E (Amb a 1);

Ambrosia artemisiifolia (short ragweed) antigen K (Amb a 2);

Ambrosia artemisiifolia (short ragweed) Ra3 antigen (Amb a 3);

Ambrosia artemisiifolia (short ragweed) Ra5 antigen (Amb a 5);

Ambrosia artemisiifolia (short ragweed) Ra6 antigen (Amb a 6);

Ambrosia artemisiifolia (short ragweed) Ra7 antigen (Amb a 7);

Ambrosia trifida (giant ragweed) Ra5G antigen (Amb t 5);

Artemisia vulgaris (mugwort) antigen (Art v 1);

Artemisia vulgaris (mugwort) antigen (Art v 2);

Helianthus annuus (sunflower) antigen (Hel a 1);

Helianthus annuus (sunflower) profilin (Hel a 2);

Mercurialis annua (annual mercury) profilin (Mer a 1);

Cynodon dactylon (Bermuda grass) antigen (Cyn d 1);

Cynodon dactylon (Bermuda grass) antigen (Cyn d 7);

Cynodon dactylon (Bermuda grass) profilin (Cyn d 12);

Dactylis glomerata (orchard grass) AgDg1 antigen (Dac g 1);

Dactylis glomerata (orchard grass) antigen (Dac g 2);

Dactylis glomerata (orchard grass) antigen (Dac g 3);
Dactylis glomerata (orchard grass) antigen (Dac g 5);
Holcus lanatus (velvet grass) antigen (Hol l 1);
Lolium perenne (rye grass) group I antigen (Lol p 1);
Lolium perenne (rye grass) group II antigen (Lol p 2);
Lolium perenne (rye grass) group III antigen (Lol p 3);
Lolium perenne (rye grass) group IX antigen (Lol p 5);
Lolium perenne (rye grass) antigen (Lol p 1b);
Lolium perenne (rye grass) trypsin (Lol p 11);
Phalaris aquatica (canary grass) antigen (Pha a 1);
Phleum pratense (timothy grass) antigen (Phl p 1);
Phleum pratense (timothy grass) antigen (Phl p 2);
Phleum pratense (timothy grass) antigen (Phl p 4);
Phleum pratense (timothy grass) antigen Ag 25 (Phl p 5);
Phleum pratense (timothy grass) antigen (Phl p 6);
Phleum pratense (timothy grass) profilin (Phl p 12);
Phleum pratense (timothy grass) polygalacturonase (Phl p 13);
Poa pratensis (Kentucky blue grass) group I antigen (Poa p 1);
Poa pratensis (Kentucky blue grass) antigen (Poa p 5);
Sorghum halepense (Johnson grass) antigen (Sor h 1);
Alnus glutinosa (alder) antigen (Aln g 1);
Betula verrucosa (birch) antigen (Bet v 1);
Betula verrucosa (birch) profilin (Bet v 2);
Betula verrucosa (birch) antigen (Bet v 3);
Betula verrucosa (birch) antigen (Bet v 4);
Betula verrucosa (birch) isoflavone reductase homologue (Bet v 5);
Betula verrucosa (birch) cyclophilin (Bet v 7);
Carpinus betulus (hornbeam) antigen (Car b 1);
Castanea sativa (chestnut) Bet v 1 homologue (Cas s 1);
Castanea sativa (chestnut) chitinase (Cas s 5);
Corvus avelana (hazel) antigen (Cor a 1);

Quercus alba (white oak) antigen (Que a 1);
Cryptomeria japonica (sugi) antigen (Cry j 1);
Cryptomeria japonica (sugi) antigen (Cry j 2);
Juniperus ashei (mountain cedar) antigen (Jun a 1);
Juniperus ashei (mountain cedar) antigen (Jun a 3);
Juniperus oxycedrus (prickly juniper) calmodulin-like antigen (Jun o 2);
Juniperus sabina (mountain cedar) antigen (Jun s 1);
Juniperus virginiana (eastern red cedar) antigen (Jun v 1);
Fraxinus excelsior (ash) antigen (Fra c 1);
Ligustrum vulgare (privet) antigen (Lig v 1);
Olea europaea (olive) antigen (Ole e 1);
Olea europaea (olive) profilin (Ole e 2);
Olea europaea (olive) antigen (Ole e 3);
Olea europaea (olive) antigen (Ole e 4);
Olea europaea (olive) superoxide dismutase (Ole e 5);
Olea europaea (olive) antigen (Ole e 6);
Syringa vulgaris (lilac) antigen (Syr v 1);
Acarus siro (mite) fatty acid-binding protein (Aca s 13);
Blomia tropicalis (mite) antigen (Blo t 5);
Blomia tropicalis (mite) Bt11a antigen (Blo t 12);
Blomia tropicalis (mite) Bt6 fatty acid-binding protein (Blo t);
Dermatophagoïdes pteronyssinus (mite) antigen P1 (Der p 1);
Dermatophagoïdes pteronyssinus (mite) antigen (Der p 2);
Dermatophagoïdes pteronyssinus (mite) trypsin (Der p 3);
Dermatophagoïdes pteronyssinus (mite) amylase (Der p 4);
Dermatophagoïdes pteronyssinus (mite) antigen (Der p 5);
Dermatophagoïdes pteronyssinus (mite) chymotrypsin (Der p 6);
Dermatophagoïdes pteronyssinus (mite) antigen (Der p 7);
Dermatophagoïdes pteronyssinus (mite) glutathione transferase (Der p 8);
Dermatophagoïdes pteronyssinus (mite) collagenolytic serine prot. (Der p 9);
Dermatophagoïdes pteronyssinus (mite) tropomyosin (Der p 10);

Dermatophagooides pteronyssinus (mite) apolipophorin like p (Der p 14);
Dermatophagooides microceras (mite) antigen (Der m 1);
Dermatophagooides farinae (mite) antigen (Der f 1);
Dermatophagooides farinae (mite) antigen (Der f 2);
Dermatophagooides farinae (mite) antigen (Der f 3);
Dermatophagooides farinae (mite) tropomyosin (Der f 10);
Dermatophagooides farinae (mite) paramyosin (Der f 11);
Dermatophagooides farinae (mite) Mag 3, apolipophorin (Der f 14);
Euroglyphus maynei (mite) apolipophorin (Eur m 14);
Lepidoglyphus destructor (storage mite) antigen (Lep d 2.0101);
Lepidoglyphus destructor (storage mite) antigen (Lep d 2.0102);
Bos domesticus (cow) Ag3, lipocalin (Bos d 2);
Bos domesticus (cow) alpha-lactalbumin (Bos d 4);
Bos domesticus (cow) beta-lactalbumin (Bos d 5);
Bos domesticus (cow) serum albumin (Bos d 6);
Bos domesticus (cow) immunoglobulin (Bos d 7);
Bos domesticus (cow) casein (Bos d 8);
Canis familiaris (dog) antigen (Can f 1);
Canis familiaris (dog) antigen (Can f 2);
Canis familiaris (dog) albumin (Can f ?);
Equus caballus (horse) lipocalin (Equ c 1);
Equus caballus (horse) lipocalin (Equ c 2);
Felis domesticus (cat) cat-1 antigen (Fel d 1);
Mus musculus (mouse) MUP antigen (Mus m 1);
Rattus norvegicus (rat) antigen (Rat n 1);
Alternaria alternata (fungus) antigen (Alt a 1);
Alternaria alternata (fungus) antigen (Alt a 2);
Alternaria alternata (fungus) heat shock protein (Alt a 3);
Alternaria alternata (fungus) ribosomal protein (Alt a 6);
Alternaria alternata (fungus) YCP4 protein (Alt a 7);
Alternaria alternata (fungus) aldehyde dehydrogenase (Alt a 10);

Alternaria alternata (fungus) enloase (Alt a 11);
Alternaria alternata (fungus) acid. ribosomal protein P1 (Alt a 12);
Cladosporium herbarum (fungus) antigen (Cla h 1);
Cladosporium herbarum (fungus) antigen (Cla h 2);
Cladosporium herbarum (fungus) aldehyde dehydrogenase (Cla h 3);
Cladosporium herbarum (fungus) ribosomal protein;
Cladosporium herbarum (fungus) YCP4 protein (Cla h 5);
Cladosporium herbarum (fungus) enolase (Cla h 6);
Cladosporium herbarum (fungus) acid. ribosomal protein P1 (Cla h 12);
Aspergillus flavus (fungus) alkaline serine proteinase (Asp fl 13);
Aspergillus Fumigatus (fungus) antigen (Asp f 1);
Aspergillus Fumigatus (fungus) antigen (Asp f 2);
Aspergillus Fumigatus (fungus) peroxisomal protein (Asp f 3);
Aspergillus Fumigatus (fungus) antigen (Asp f 4);
Aspergillus Fumigatus (fungus) metalloproteinase (Asp f 5);
Aspergillus Fumigatus (fungus) Mn superoxide dismutase (Asp f 6);
Aspergillus Fumigatus (fungus) antigen (Asp f 7);
Aspergillus Fumigatus (fungus) ribosomal protein P2 (Asp f 8);
Aspergillus Fumigatus (fungus) antigen (Asp f 9);
Aspergillus Fumigatus (fungus) aspartic protease (Asp f 10);
Aspergillus Fumigatus (fungus) peptidyl-prolyl isomerase (Asp f 11);
Aspergillus Fumigatus (fungus) heat shock protein P70 (Asp f 12);
Aspergillus Fumigatus (fungus) alkaline serine proteinase (Asp f 13);
Aspergillus Fumigatus (fungus) antigen (Asp f 15);
Aspergillus Fumigatus (fungus) antigen (Asp f 16);
Aspergillus Fumigatus (fungus) antigen (Asp f 17);
Aspergillus Fumigatus (fungus) vacuolar serine (Asp f 18);
Aspergillus niger (fungus) beta-xylosidase (Asp n 14);
Aspergillus niger (fungus) antigen (Asp n 18);
Aspergillus niger (fungus) vacuolar serine proteinase;
Aspergillus oryzae (fungus) TAKA-amylase A (Asp o 2);

Aspergillus oryzae (fungus) alkaline serine proteinase (Asp o 13);
Penicillium brevicompactum (fungus) alkaline serine proteinase (Pen b 13);
Penicillium citrinum (fungus) heat shock protein P70 (Pen c 1);
Penicillium citrinum (fungus) peroxisomal membrane protein (Pen c 3);
Penicillium citrinum (fungus) alkaline serine proteinase (Pen c 13);
Penicillium notatum (fungus) N-acetyl glucosaminidase (Pen n 1);
Penicillium notatum (fungus) alkaline serine proteinase (Pen n 13);
Penicillium notatum (fungus) vacuolar serine proteinase (Pen n 18);
Penicillium oxalicum (fungus) vacuolar serine proteinase (Pen o 18);
Trichophyton rubrum (fungus) antigen (Tri r 2);
Trichophyton rubrum (fungus) serine protease (Tri r 4);
Trichophyton tonsurans (fungus) antigen (Tri t 1);
Trichophyton tonsurans (fungus) serine protease (Tri t 4);
Candida albicans (fungus) antigen (Cand a 1);
Candida boidinii (fungus) antigen (Cand b 2);
Malassezia furfur (fungus) antigen (Mal f 1);
Malassezia furfur (fungus) MF1 peroxisomal membrane protein (Mal f 2);
Malassezia furfur (fungus) MF2 peroxisomal membrane protein (Mal f 3);
Malassezia furfur (fungus) antigen (Mal f 4);
Malassezia furfur (fungus) antigen (Mal f 5);
Malassezia furfur (fungus) cyclophilin homologue (Mal f 6);
Psilocybe cubensis (fungus) antigen (Psi c 1);
Psilocybe cubensis (fungus) cyclophilin (Psi c 2);
Coprinus comatus (shaggy cap) antigen (Cop c 1);
Coprinus comatus (shaggy cap) antigen (Cop c 2);
Coprinus comatus (shaggy cap) antigen (Cop c 3);
Coprinus comatus (shaggy cap) antigen (Cop c 5);
Coprinus comatus (shaggy cap) antigen (Cop c 7);
Aedes aegyptii (mosquito) apyrase (Aed a 1);
Aedes aegyptii (mosquito) antigen (Aed a 2);
Apis mellifera (honey bee) phospholipase A2 (Api m 1);

Apis mellifera (honey bee) hyaluronidase (Api m 2);
Apis mellifera (honey bee) melittin (Api m 4);
Apis mellifera (honey bee) antigen (Api m 6);
Bombus pennsylvanicus (bumble bee) phospholipase (Bom p 1);
Bombus pennsylvanicus (bumble bee) protease (Bom p 4);
Blattella germanica (German cockroach) Bd90k (Bla g 1);
Blattella germanica (German cockroach) aspartic protease (Bla g 2);
Blattella germanica (German cockroach) calycin (Bla g 4);
Blattella germanica (German cockroach) glutathione transferase (Bla g 5);
Blattella germanica (German cockroach) troponin C (Bla g 6);
Periplaneta americana (American cockroach) Cr-PII (Per a 1);
Periplaneta americana (American cockroach) Cr-PI (Per a 3);
Periplaneta americana (American cockroach) tropomyosin (Per a 7);
Chironomus thummi thummi (midge) hemoglobin (Chi t 1-9);
Chironomus thummi thummi (midge) component III (Chi t 1.01);
Chironomus thummi thummi (midge) component IV (Chi t 1.02);
Chironomus thummi thummi (midge) component I (Chi t 2.0101);
Chironomus thummi thummi (midge) component IA (Chi t 2.0102);
Chironomus thummi thummi (midge) component II-beta (Chi t 3);
Chironomus thummi thummi (midge) component IIIA (Chi t 4);
Chironomus thummi thummi (midge) component VI (Chi t 5);
Chironomus thummi thummi (midge) component VIIA (Chi t 6.01);
Chironomus thummi thummi (midge) component IX (Chi t 6.02);
Chironomus thummi thummi (midge) component VIIB (Chi t 7);
Chironomus thummi thummi (midge) component VIII (Chi t 8);
Chironomus thummi thummi (midge) component X (Chi t 9);
Dolichovespula maculata (white face hornet) phospholipase (Dol m 1);
Dolichovespula maculata (white face hornet) hyaluronidase (Dol m 2);
Dolichovespula maculata (white face hornet) antigen 5 (Dol m 5);
Dolichovespula arenaria (yellow hornet) antigen 5 (Dol a 5);
Polistes annularies (wasp) phospholipase A1 (Pol a 1);

Polistes annularies (wasp) hyaluronidase (Pol a 2);
Polistes annularies (wasp) antigen 5 (Pol a 5);
Polistes dominulus (Mediterranean paper wasp) antigen (Pol d 1);
Polistes dominulus (Mediterranean paper wasp) serine protease (Pol d 4);
Polistes dominulus (Mediterranean paper wasp) antigen (Pol d 5);
Polistes exclamans (wasp) phospholipase A1 (Pol c 1);
Polistes exclamans (wasp) antigen 5 (Pol c 5);
Polistes fuscatus (wasp) antigen 5 (Pol f 5);
Polistes metricus (wasp) antigen 5 (Pol m 5);
Vespa crabo (European hornet) phospholipase (Vesp c 1);
Vespa crabo (European hornet) antigen 5 (Vesp c 5.0101);
Vespa crabo (European hornet) antigen 5 (Vesp c 5.0102);
Vespa mandarina (giant Asian hornet) antigen (Vesp m 1.01);
Vespa mandarina (giant Asian hornet) antigen (Vesp m 1.02);
Vespa mandarina (giant Asian hornet) antigen (Vesp m 5);
Vespula flavopilosa (yellowjacket) antigen 5 (Ves f 5);
Vespula germanica (yellowjacket) antigen 5 (Ves g 5);
Vespula maculifrons (yellowjacket) phospholipase A1 (Ves m 1);
Vespula maculifrons (yellowjacket) hyaluronidase (Ves m 2);
Vespula maculifrons (yellowjacket) antigen 5 (Ves m 5);
Vespula pensylvanica (yellowjacket) (antigen 5Ves p 5);
Vespula squamosa (yellowjacket) antigen 5 (Ves s 5);
Vespula vidua (wasp) antigen (Ves vi 5);
Vespula vulgaris (yellowjacket) phospholipase A1 (Ves v 1);
Vespula vulgaris (yellowjacket) hyaluronidase (Ves v 2);
Vespula vulgaris (yellowjacket) antigen 5 (Ves v 5);
Myrmecia pilosula (Australian jumper ant) antigen (Myr p 1);
Myrmecia pilosula (Australian jumper ant) antigen (Myr p 2);
Solenopsis geminata (tropical fire ant) antigen (Sol g 2);
Solenopsis geminata (tropical fire ant) antigen (Sol g 4);
Solenopsis invicta (fire ant) antigen (Sol i 2);

Solenopsis invicta (fire ant) antigen (Sol i 3);
Solenopsis invicta (fire ant) antigen (Sol i 4);
Solenopsis saevissima (Brazilian fire ant) antigen (Sol s 2);
Gadus callarias (cod) allergen M (Gad c 1);
Salmo salar (Atlantic salmon) parvalbumin (Sal s 1);
Bos domesticus (cow) alpha-lactalbumin (Bos d 4);
Bos domesticus (cow) beta-lactalbumin (Bos d 5);
Bos domesticus (cow) serum albumin (Bos d 6);
Bos domesticus (cow) immunoglobulin (Bos d 7);
Bos domesticus (cow) cascins (Bos d 8);
Gallus domesticus (chicken) ovomucoid (Gal d 1);
Gallus domesticus (chicken) ovalbumin (Gal d 2);
Gallus domesticus (chicken) conalbumin; A22 (Gal d 3);
Gallus domesticus (chicken) lysozyme (Gal d 4);
Gallus domesticus (chicken) serum albumin (Gal d 5);
Metapenaeus ensis (shrimp) tropomyosin (Met e 1);
Penaeus aztecus (shrimp) tropomyosin (Pen a 1);
Penaeus indicus (shrimp) tropomyosin (Pen i 1);
Todarodes pacificus (squid) tropomyosin (Tod p 1);
Haliotis Midae (abalone) antigen (Hal m 1);
Apium graveolens (celery) Bet v 1 homologue (Api g 1);
Apium graveolens (celery) profilin (Api g 4);
Apium graveolens (celery) antigen (Api g 5);
Brassica juncea (oriental mustard) 2S albumin (Bra j 1);
Brassica rapa (turnip) prohevein-like protein (Bar r 2);
Hordeum vulgare (barley) BMAL-1 (Hor v 1);
Zea mays (maize, corn) lipid transfer protein (Zea m 14);
Corylus avellana (hazelnut) Bet v 1 homologue (Cor a 1.0401);
Malus domestica (apple) Bet v 1 homologue (Mal d 1);
Malus domestica (apple) lipid transfer protein (Mal d 3);
Pyrus communis (pear) Bet v 1 homologue (Pyr c 1);

Pyrus communis (pear) profilin (Pyr c 4);
Pyrus communis (pear) isoflavone reductase homologue (Pyr c 5);
Oryza sativa (rice) antigen (Ory s 1);
Persea americana (avocado) endochitinase (Pers a 1);
Prunus armeniaca (apricot) Bet v 1 homologue (Pru ar 1);
Prunus armeniaca (apricot) lipid transfer protein (Pru ar 3);
Prunus avium (sweet cherry) Bet v 1 homologue (Pru av 1);
Prunus avium (sweet cherry) thaumatin homologue (Pru av 2);
Prunus avium (sweet cherry) profilin (Pru av 4);
Prunus persica (peach) lipid transfer protein (Pru p 3);
Sinapis alba (yellow mustard) 2S albumin (Sin a 1);
Glycine max (soybean) HPS (Gly m 1.0101);
Glycine max (soybean) HPS (Gly m 1.0102);
Glycine max (soybean) antigen (Gly m 2);
Glycine max (soybean) profilin (Gly m 3);
Arachis hypogaea (peanut) vicilin (Ar a h 1);
Arachis hypogaea (peanut) (conglutin Ar a h 2);
Arachis hypogaea (peanut) glycinin (Ar a h 3);
Arachis hypogaea (peanut) glycinin (Ar a h 4);
Arachis hypogaea (peanut) (profilin Ar a h 5);
Arachis hypogaea (peanut) conglutin homologue (Ar a h 6);
Arachis hypogaea (peanut) conglutin homologue (Ar a h 7);
Actinidia chinensis (kiwi) cysteine protease (Act c 1);
Solanum tuberosum (potato) patatin (Sol t 1);
Bertholletia excelsa (Brazil nut) 2S albumin (Ber e 1);
Juglans regia (English walnut) 2S albumin (Jug r 1);
Juglans regia (English walnut) vicilin (Jug r 2);
Ricinus communis (castor bean) 2S albumin (Ric c 1);
Anisakis simplex (nematode) antigen (Ani s 1);
Anisakis simplex (nematode) paramyosin (Ani s 2);
Ascaris suum (worm) antigen (Asc s 1);

Aedes aegyptii (mosquito) apyrase (Aed a 1);
Aedes aegyptii (mosquito) antigen (Aed a 2);
Hevea brasiliensis (rubber) elongation factor (Hev b 1);
Hevea brasiliensis (rubber) 1,3-glucanase (Hev b 2);
Hevea brasiliensis (rubber) antigen (Hev b 3);
Hevea brasiliensis (rubber) component of microhelix protein complex (Hev b 4);
Hevea brasiliensis (rubber) antigen (Hev b 5);
Hevea brasiliensis (rubber) hevein precursor (Hev b 6.01);
Hevea brasiliensis (rubber) hevein (Hev b 6.02);
Hevea brasiliensis (rubber) C-terminal fragment antigen (Hev b 6.03);
Hevea brasiliensis (rubber) patatin homologue (Hev b 7);
Hevea brasiliensis (rubber) profilin (Hev b 8);
Hevea brasiliensis (rubber) enolase (Hev b 9);
Hevea brasiliensis (rubber) Mn-superoxide dismut (Hev b 10);
Ctenocephalides felis felis (cat flea) antigen (Cte f 1);
Homo sapiens (human autoallergen) antigen (Hom s 1);
Homo sapiens (human autoallergen) antigen (Hom s 2);
Homo sapiens (human autoallergen) antigen (Hom s 3);
Homo sapiens (human autoallergen) antigen (Hom s 4); and
Homo sapiens (human autoallergen) antigen (Hom s 5); and
a pharmaceutically acceptable carrier appropriate for rectal, vaginal, nasal, oral,
buccal, or mucosal delivery.

- wherein the wild-type allergen is selected from the group consisting of the allergens presented
in the following Table:

ALLERGEN SOURCE	SYSTEMATIC AND ORIGINAL NAMES	MW kDa	SEQ	ACCESSION NO. OR REFERENCES
<u>WEED POLLENS</u>				
<u><i>Asterales</i></u>				
Ambrosia artemisiifolia (short ragweed)	Amb a 1; antigen E	38	C	8.—Griffith, I.J., J. Pollock, D.G. Klapper, B.L. Rogers, and A.K. Nault. 1991. Sequence polymorphism of Amb a 1 and Amb a 2, the major allergens in Ambrosia artemisiifolia (short ragweed). Int. Arch. Allergy Appl. Immunol. 96:296-304.

			20. Rafnar, T., I. J. Griffith, M. C. Kuo, J. F. Bond, B. L. Rogers, and D.G. Klapper. 1991. Cloning of Amb a I (Antigen E), the major allergen family of short ragweed pollen. <i>J. Biol. Chem.</i> 266: 1229-1236.
Amb a 2; antigen K	38	C	8.—Griffith, I.J., J. Polloek, D.G. Klapper, B.L. Rogers, and A.K. Nault. 1991. Sequence polymorphism of Amb a I and Amb a II, the major allergens in <i>Ambrosia artemisiifolia</i> (short ragweed). <i>Int. Arch. Allergy Appl. Immunol.</i> 96:296-304. 21.—Rogers, B.L., J.P. Morgenstern, I.J. Griffith, X.B. Yu, C.M. Counsell, A.W. Brauer, T.P. King, R.D. Garman, and M.C. Kuo. 1991. Complete sequence of the allergen Amb a II recombinant expression and reactivity with T cells from ragweed allergic patients. <i>J. Immunol.</i> 147:2547-2552.
Amb a 3; Ra3	11	C	22.—Klapper, D.G., L. Goodfriend, and J.D. Capra. 1980. Amino acid sequence of ragweed allergen Ra3. <i>Biochemistry</i> 19:5729-5734.
Amb a 5; Ra5	5	C	11.—Metzler, W. J., K. Valentine, M. Reebber, D. G. Marsh, and L. Mueller. 1992. Proton resonance assignments and three-dimensional solution structure of the ragweed allergen Amb a V by nuclear magnetic resonance spectroscopy. <i>Biochemistry</i> 31:8697-8705. 23.—Ghosh, B., M.P. Perry, T. Rafnar, and D.G. Marsh. 1992. Cloning and expression of immunologically active recombinant Amb a V allergen of short ragweed (<i>Ambrosia artemisiifolia</i>) pollen. <i>J. Immunol.</i> 150:5391-5399.
Amb a 6; Ra6	10	C	24.—Reebber, M., R. Hussain, D. G. Klapper, and D. G. Marsh. 1982. Isolation and properties of a new short ragweed pollen allergen, Ra6. <i>J. Immunol.</i> 134:706-711. 25.—Lubahn, B., and D.G. Klapper. 1993. Cloning—and characterization—of ragweed allergen Amb a VI (abst). <i>J. Allergy Clin. Immunol.</i> 91:338.
Amb a 7; Ra7	12	P	26.—Reebber, M., and D.G. Marsh. 1991. Isolation and characterization of allergen Amb a VII from short ragweed pollen. <i>J. Allergy Clin. Immunol.</i> 87:324.
Amb a 2	11	C	27.—Rogers, B.L., J. Polloek, D.G. Klapper, and I.J. Griffith. 1993. Cloning, complete sequence, and recombinant expression of a novel allergen from short ragweed pollen

Ambrosia trifida (giant ragweed)	Amb t 5; Ra5G	4.4	C	<p>(abst). J. Allergy Clin. Immunol. 91:339.</p> <p>9.—Roebber, M., D. G. Klapper, L. Goodfriend, W. B. Bias, S. H. Hsu, and D. G. Marsh. 1985. Immunochemical and genetic studies of Amb t V (Ra5G), an Ra5 homologue from giant ragweed pollen. J. Immunol. 134:3062-3069.</p> <p>10.—Metzler, W. J., K. Valentine, M. Roebber, M. Friedrichs, D. G. Marsh, and L. Mueller. 1992. Solution structures of ragweed allergen Amb t V. Biochemistry 31:S117-S127.</p> <p>28.—Goodfriend, L., A.M. Choudhury, D.G. Klapper, K.M. Coulter, G. Dorval, J. DelCarpio, and C.K. Osterland. 1985. Ra5G, a homologue of Ra5 in giant ragweed pollen: isolation, HLA DR-associated activity and amino acid sequence. Mol. Immunol. 22:899-906.</p>
Artemisia vulgaris (mugwort)	Art v 1	27.29	C	28A. Breitenbach M. pers. comm.
	Art v 2	35	P	29.—Nilzen, B. M., K. Skjetten, M. O'Neill, B. Smestad Paulsen, and H. van Halbeek. 1991. Structural analysis of the glycoprotein allergen Art v II from pollen of mugwort (<i>Artemesia vulgaris</i>). J. Biol. Chem. 266:2660-2668.
Helianthus annuus (sunflower)	Hel a 1	34	-	29A.—Jimenez A., Moreno C., Martinez J., Martinez A., Bartolome B., Guerra F., Pelacios R. 1994. Sensitization to sunflower pollen: only an occupational allergy? Int Arch Allergy Immunol 105:297-307.
	Hel a 2; profilin	15.7	C	Y15210
Mercurialis annua	Mer a 1; profilin	14.15	C	Y13271
GRASS POLLENS				
Poales				
Cynodon dactylon (Bermuda-grass)	Cyn d 4	32	C	<p>30.—Smith, P.M., Suphioglu, C., Griffith, J.J., Theriault, K., Knox, R.B. and Singh, M.B. 1996. Cloning and expression in yeast <i>Pichia pastoris</i> of a biologically active form of Cyn d 1, the major allergen of Bermuda grass pollen. J. Allergy Clin. Immunol. 98:331-343.</p> <p>S83343</p>
	Cyn d 7		C	<p>31.—Suphioglu, C., Ferreira, F. and Knox, R.B. 1997. Molecular cloning and immunological characterisation of Cyn d 7, a novel calcium-binding allergen from Bermuda grass pollen. FEBS Lett. 402:167-172.</p>

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	Cyn d 12; profilin	++	E 34a.—Asturias JA, Arilla MC, Gomez Bayon N, Martinez J, Martinez A, and Palacios R. 1997. Cloning and high level expression of Cynodon dactylon (Bermuda grass) pollen profilin (Cyn d 12) in Escherichia coli: purification and characterization of the allergen. Clin Exp Allergy 27:1307-1313. Y08390
<i>Daetilis glomerata</i> (orchard grass)	Dae g 1; AgDg1	++	P 32.—Meeheri, S., G. Peltre, and B. David. 1985. Purification and characterization of a major allergen from <i>Daetilis glomerata</i> pollen: The Ag Dg 1. Int. Arch. Allergy Appl. Immunol. 78:283-289.
	Dae g 2	++	E 33.—Roberts, A.M., L.J. Bevan, P.S. Flora, I. Jepson, and M.R. Walker. 1993. Nucleotide sequence of cDNA encoding the Group II allergen of Cockfoot/Orehard grass (<i>Daetilis glomerata</i>), Dae g II. Allergy 48:615-623. S45354
	Dae g 3		E 33a.—Guerin Marchand,C., Senechal,H., Bouin,A.P., Ledue-Brotard,V., Taudou,G., Weyer,A., Peltre,G. and David,B. 1996. Cloning, sequencing and immunological characterization of Dae g 3, a major allergen from <i>Daetilis glomerata</i> pollen. Mol. Immunol. 33:797-806. U25343
	Dae g 5	++	P 34.—Klysner,S., K. Welinder, H. Lowenstein, and F. Matthiesen. 1992. Group V allergens in grass pollen IV. Similarities in amino acid compositions and amino terminal sequences of the group V allergens from <i>Lolium perenne</i> , <i>Poa pratensis</i> and <i>Daetilis glomerata</i> . Clin. Exp. Allergy 22:491-497.
<i>Holcus lanatus</i> (velvet grass)	Hol l 1		E Z32084 Z68893
<i>Lolium perenne</i> (rye grass)	Lol p 1; group I	++	E 35.—Perez, M., G. Y. Ishioka, L. E. Walker, and R. W. Chesnut. 1990. cDNA cloning and immunological characterization of the rye grass allergen Lol p 1. J. Biol. Chem. 265:16210-16215. 36.—Griffith, I. J., P. M. Smith, J. Pollock, P. Theerakulpisut, A. Avijoglu, S. Davies, T. Hough, M. B. Singh, R. J. Simpson, L. D. Ward, and R. B. Knox. 1991. Cloning and sequencing of Lol p 1, the major allergenic protein of rye grass pollen. FEBS Letters

			279:210-215.
Lol p 2; group II	++		<p>37. Ansari, A. A., P. Shenbagamurthi, and D.G. Marsh. 1989. Complete amino acid sequence of a <i>Lolium perenne</i> (perennial rye grass) pollen allergen, Lol p II. <i>J. Biol. Chem.</i> 264:11181-11185.</p> <p>37a. Sidoli,A., Tamborini,E., Giuntini,L.; Levi,S., Volonte,G., Paini,C., De Lalla,C., Siceandi,A.G., Baralle,F.E., Galliani,S. and Arosio,P. 1993. Cloning, expression, and immunological characterization of recombinant <i>Lolium perenne</i> allergen Lol p II. <i>J. Biol. Chem.</i> 268:21819-21825.</p> <p>X73363</p>
Lol p 3; group III	++		<p>38. Ansari, A. A., P. Shenbagamurthi, and D. G. Marsh. 1989. Complete primary structure of a <i>Lolium perenne</i> (perennial rye grass) pollen allergen, Lol p III: Comparison with known Lol p I and II sequences. <i>Biochemistry</i> 28:8665-8670;</p>
Lol p 5; Lol p IX;	31/35		<p>34. Klyner,S., K. Welinder, H., Lowenstein, and F. Matthiesen. 1992. Group V allergens in grass pollen IV: Similarities in amino acid compositions and amino terminal sequences of the group V allergens from <i>Lolium perenne</i>, <i>Poa pratensis</i> and <i>Dactylis glomerata</i>. <i>Clin. Exp. Allergy</i> 22:491-497.</p> <p>39. Singh, M. B., T. Hough, P., Theerakulpisut, A. Avjioglu, S. Davies, P. M. Smith, P. Taylor, R. J. Simpson, L. D. Ward, J. McCluskey, R. Puy, and R.B. Knox. 1991. Isolation of cDNA encoding a newly identified major allergenic protein of rye grass pollen: Intracellular targeting to the amyloplast. <i>Proc. Natl. Acad. Sci.</i> 88:1384-1388,</p>
Lol p Ib			
Lol p II; trypsin	46		<p>39a.—van Ree R, Hoffman DR, van Dijk W, Brodard V, Mahieu K, Koelenman CA, Grande M, van Leeuwen WA, Aalberse RC. 1995. Lol p XI, a new major grass pollen allergen, is a member of a family of soybean trypsin inhibitor related proteins. <i>J Allergy Clin Immunol</i> 95:970-978.</p>
inh-Related			
Phalaris aquatica (canary grass)	Pha a 1	€	<p>40. Suphioglu,C. and Singh,M.B. 1995. Cloning, sequencing and expression in <i>Escherichia coli</i> of Pha a 1 and four isoforms of Pha a 5, the major allergens of canary</p>

				grass pollen. Clin. Exp. Allergy 25:853-865. S80654
Phleum pratense (timothy grass)	Phl p 1	27	C	X78813
	Phl p 2		C	41. Doleek,C., Vrtala,S., Laffer,S., Steinberger,P., Kraft,D., Scheiner,O. and Valenta,R. 1993. Molecular characterization of Phl p II, a major timothy grass (<i>Phleum pratense</i>) pollen allergen. FEBS Lett. 335:299-304. X75925
	Phl p 4		P	41A. Fischer S., Grote M., Fahrbusch B., Muller WD., Kraft D., Valenta R. 1996. Characterization of Phl p 4, a major timothy grass (<i>Phleum pratense</i>) pollen allergen. J. Allergy Clin Immunol 98:189-198.
	Phl p 5; Ag25	32	C	42. Matthiesen, F., and H. Lowenstein. 1991. Group V allergens in grass pollens. I. Purification and characterization of the group V allergens from <i>Phleum pratense</i> pollen, Phl p V. Clin. Exp. Allergy 21:297-307.
	Phl p 6		C	43. Petersen,A., Bufe,A., Schramm,G., Schlank,M. and Becker,W.M. 1993. Characterization of the allergen group VI in timothy grass pollen (Phl p 6). II. cDNA cloning of Phl p 6 and structural comparison to grass group V. Int. Arch. Allergy Immunol. 108:55-59. Z27082
	Phl p 12; profilin		C	44. Valenta,R., Ball,T., Vrtala,S., Duchene,M., Kraft,D. and Scheiner,O. 1994. cDNA cloning and expression of timothy grass (<i>Phleum pratense</i>) pollen profilin in <i>Escherichia coli</i> ; comparison with birch pollen profilin. Biochem. Biophys. Res. Commun. 199:106-118. X77583
	Phl p 13; polygalacturonase	55-60	C	AJ238848
Poa pratensis (Kentucky blue grass)	Poa p 1; group I	33	P	46. Esch, R. E., and D. G. Klapper. 1989. Isolation and characterization of a major cross reactive grass group I allergenic determinant. Mol. Immunol. 26:557-561.
	Poa p 5	31/34	C	34. Klysner, S., K. Welinder, H. Lowenstein, and F. Matthiesen. 1992. Group V allergens in grass pollen IV: Similarities in amino acid compositions and amino terminal sequences of the group V allergens from <i>Lolium perenne</i> , <i>Poa pratensis</i> and <i>Daucus carota</i> . Clin. Exp. Allergy

				22: 491-497.
Sorghum halepense (Johnson grass)	Sor-h-1		G	47.—Olsen, E., L. Zhang, R. D. Hill, F. T. Kisil, A. H. Schon, and S. Molapatra. 1991. Identification and characterization of the Poa p-IX group of basic allergens of Kentucky bluegrass pollen. <i>J. Immunol.</i> 147:205-211. 48.—Avjioglu, A., M. Singh, and R.B. Knox. 1993. Sequence analysis of Sor-h-1, the group I allergen of Johnson grass pollen and its comparison to rye-grass Lol-p-1 (abst). <i>J. Allergy Clin. Immunol.</i> 91:340.
TREE POLLENS				
<i>Fagales</i>				
Alnus glutinosa (alder)	Aln-g-1	17	G	\$50892
Betula verrucosa (birch)	Bet-v-1	17	G	see list of isoallergens M65179
	Bet-v-2; profilin	15	G	X79267
	Bet-v-3	8	G	X87153/S54849
	Bet-v-4		G	AF135127
	Bet-v-5; isoflavone reductase homologue	33.5	G	
	Bet-v-7; cyclophilin—	18	G	P—P81534
Carpinus betulus (hornbeam)	Car-b-1	17	G	51.—Larsen, J.N., P. Straman, and H. Ipsen. 1992. PCR-based cloning and sequencing of isogenes encoding the tree pollen major allergen Car-b-1 from <i>Carpinus betulus</i> ; hornbeam. <i>Mol. Immunol.</i> 29:703-711.
Castanea sativa (chestnut)	Cas-s-1; Bet-v-1 homologue Cas-s5; chitinase	22	P	52.—Kos T, Hoffmann-Sommergruber K, Ferreira F, Hirschwehr R, Ahorn H, Horak F, Jager S, Sperr W, Kraft D, Scheiner O. 1993. Purification, characterization and N-terminal amino acid sequence of a new major allergen from European chestnut pollen—Cas-s-1. <i>Biochem Biophys Res Commun</i> 196:1086-92.
Corylus avellana (hazel)	Cor-a-1	17	G	53.—Breiteneder, H., F. Ferreira, K. Hoffmann-Sommergruber, C. Ebner, M. Breitenbach, H. Rumpold, D. Kraft, and O. Scheiner. 1993. Four recombinant isoforms of Cor-a-1, the major allergen of hazel pollen. <i>Eur. J. Biochem.</i> 212:355-362.
Quercus alba (white oak)	Que-a-1	17	P	54.—Ipsen, H., and B.C. Hansen. 1991. The NH2 terminal amino acid sequence of the immunochemically partial identical major allergens of alder (<i>Alnus glutinosa</i>) Aln-g-1, birch (<i>Betula verrucosa</i>) Bet-v-1, hornbeam (<i>Carpinus betulus</i>) Car-b-1 and oak (<i>Quercus alba</i>) Que-a-1 pollens. <i>Mol. Immunol.</i> 28:1279-1288.

Cryptomeria japonica (sugi)	Cry j 1	41-45	C	<p>55.—Tanai, M., S. Ando, M. Usui, M. Kurimoto, M. Sakaguchi, S. Inouye, and T. Matuhasi. 1988. N terminal amino acid sequences of a major allergen of Japanese cedar pollen (Cry j 1). FEBS Lett. 239:329-332.</p> <p>56.—Griffith, I.J., A. Lussier, R. Garman, R. Koury, H. Yeung, and J. Pollock. 1993. The cDNA cloning of Cry j 1, the major allergen of <i>Cryptomeria japonica</i> (Japanese cedar) (abst). J. Allergy Clin. Immunol. 91:339.</p>
	Cry j 2		C	<p>57.—Sakaguchi, M., S. Inouye, M. Tanai, S. Ando, M. Usui, and T. Matuhasi. 1990. Identification of the second major allergen of Japanese cedar pollen. Allergy 45:309-312.</p> <p>D29772</p>
Juniperus ashei (mountain cedar)	Jun-a-1	43	P	P81294
	Jun-a-3	30	P	P81295
Juniperus oxycedrus (prickly juniper)	Jun-o-2; ecalmodulin-like	29	C	AF031471
Juniperus sabinaoides (mountain cedar)	Jun-s-1	50	P	<p>58.—Gross GN, Zimburean JM, Capra JD 1978. Isolation and partial characterization of the allergen in mountain cedar pollen. Scand J Immunol 8:437-41</p>
Juniperus virginiana (eastern red cedar)	Jun-v-1	43	P	P81825
<i>Oleaceae</i>				
Fraxinus excelsior (ash)	Fra-e-1	20	P	<p>58A—Obispo TM, Melero JA, Carpizo JA, Carreira J, Lombardero M 1993. The main allergen of <i>Olea europaea</i> (Ole e 1) is also present in other species of the oleaceae family. Clin Exp Allergy 23:311-316.</p>
Ligustrum vulgare (privet)	Lig-v-1	20	P	<p>58A—Obispo TM, Melero JA, Carpizo JA, Carreira J, Lombardero M 1993. The main allergen of <i>Olea europaea</i> (Ole e 1) is also present in other species of the oleaceae family. Clin Exp Allergy 23:311-316.</p>
Olea europaea (olive)	Ole-e-1;	16	C	<p>59.—Cardaba, B., D. Hernandez, E. Martin, B. de Andres, V. del Pozo, S. Gallardo, J.C. Fernandez, R. Rodriguez, M. Villalba, P. Palomino, A. Basomba, and C. Lahoz. 1993. Antibody response to olive pollen antigens: association between HLA class II genes and IgE response to Ole e 1 (abst). J. Allergy Clin. Immunol. 91:338.</p> <p>60.—Villalba, M., E. Batanero, C. Lopez-Otin, L.M. Sanchez, R.I. Monsalve, M.A. Gonzalez de la Pena, C. Lahoz, and R.</p>

				Rodriguez. 1993. Amino acid sequence of Ole e 1, the major allergen from olive tree pollen (<i>Olea europaea</i>). <i>Euro J Biochem.</i> 216:863-869.
Ole e 2; profilin	15-18	C	60A. Asturias JA, Arilla MC, Gomez Bayon N, Martinez J, Martinez A, Palacios R. 1997. Cloning and expression of the panallergen profilin and the major allergen (Ole e 1) from olive tree pollen. <i>J Allergy Clin Immunol</i> 100:365-372.	
Ole e 3;	9.2		60B. Batanero E, Villaiba M, Ledesma A, Puente XS, Rodriguez R. 1996. Ole e 3, an olive tree allergen, belongs to a widespread family of pollen proteins. <i>Eur J Biochem</i> 241:772-778.	
Ole e 4;	32	P	P80741	
Ole e 5; superoxide dismutase	16	P	P80740	
Ole e 6;	10	C	U86342	
Syringa vulgaris (lilac)	Syr v 1	20	P	58A. Obispo TM, Melero JA, Carpizo JA, Carreira J, Lombardero M. 1993. The main allergen of <i>Olea europaea</i> (Ole e 1) is also present in other species of the oleaceae family. <i>Clin Exp Allergy</i> 23:311-316.
MITES				
Acarus siro (mite)	Aca s 13; fatty acid bind. prot.	14*	C	AJ006774
Blomia tropicalis (mite)	Blo t 5;		C	U59102
	Blo t 12; Blo t 1a		C	U27479
	Blo t 13; Blo t 6 fatty acid binding prot		C	U58106
Dermatophagoid es pteronyssinus (mite)	Der p 1; antigen P1	25	C	61. Chua, K. Y., G. A. Stewart, and W. R. Thomas. 1988. Sequence analysis of cDNA encoding for a major house dust mite allergen, Der p I. <i>J. Exp. Med.</i> 167:175-182.
	Der p 2;	14	C	62. Chua, K. Y., C. R. Doyle, R. J. Simpson, K. J. Turner, G. A. Stewart, and W. R. Thomas. 1990. Isolation of cDNA coding for the major mite allergen Der p II by IgE plaque immunoassay. <i>Int. Arch. Allergy Appl. Immunol.</i> 91:118-123.
	Der p 3; trypsin	28/30	C	63. Smith WA, Thomas WR. 1996. Comparative analysis of the genes encoding group 3 allergens from Dermatophagoides pteronyssinus and Dermatophagoides farinae. <i>Int Arch Allergy Immunol</i> 109: 133-40.
	Der p 4; amylase	60	C	64. Lake, F.R., L.D. Ward, R.J. Simpson, P.J. Thompson, and G.A. Stewart. 1991. House dust mite derived amylase: Allergenicity and physicochemical characterisation. <i>J. Allergy Clin. Immunol.</i> 87:1035-1042.
	Der p 5;	14	P	65. Tovey, E. R., M. C. Johnson, A. L. Roche, G. S. Cohen, and B. A. Baldo. 1989.

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Der p 6; chymotrypsin	25	C	66.—Yasueda, H., T. Shida, T. Ando, S. Sugiyama, and H. Yamakawa. 1991. Allergenic and proteolytic properties of fourth allergens from <i>Dermatophagoides</i> mites. In: "Dust Mite Allergens and Asthma: Report of the 2nd international workshop" A. Todt, Ed., UCB Institute of Allergy, Brussels, Belgium, pp. 63-64.	
Der p 7;	22-28	C	67.—Shen, H. D., K. Y. Chua, K. L. Lin, K. H. Hsieh, and W.R. Thomas. 1993. Molecular cloning of a house dust mite allergen with common antibody binding specificities with multiple components in mite extracts. <i>Clin. Exp. Allergy</i> 23:934-40.	
Der p 8; glutathione transferase		P	67A.—O'Neill GM, Donovan GR, Baldo BA. 1994. Cloning and characterisation of a major allergen of the house dust mite <i>Dermatophagoides pteronyssinus</i> , homologous with glutathione S-transferase. <i>Biochim Biophys Acta</i> 1219:521-528.	
Der p 9; collagenolytic serine prot.		C	67B.—King C, Simpson RJ, Moritz RL, Reed GE, Thompson PJ, Stewart GA. 1996. The isolation and characterization of a novel collagenolytic serine protease allergen (Der p 9) from the dust mite <i>Dermatophagoides pteronyssinus</i> . <i>J Allergy Clin Immunol</i> 98:739-47.	
Der p 10; tropomyosin	36		Y14906	
Der p 14; apolipoprotein like p		C	Epton p.e.	
Dermatophagoid es microceras (mite)	Der m 1;	25	P	68.—Lind P, Hansen OC, Horn N. 1988. The binding of mouse hybridoma and human IgE antibodies to the major fecal allergen, Der m 1 of <i>D. pteronyssinus</i> . <i>J. Immunol.</i> 140:4256-4262.
Dermatophagoid es farinae (mite)	Der f 1;	25	C	69.—Dilworth, R. J., K. Y. Chua, and W. R. Thomas. 1991. Sequence analysis of cDNA coding for a major house dust allergen Der f I. <i>Clin. Exp. Allergy</i> 21:25-32.
	Der f 2;	14	C	70.—Nishiyama, C., T. Yunki, T. Takai, Y. Okumura, and H. Okudaira. 1993. Determination of three disulfide bonds in a major house dust mite allergen, Der f II. <i>Int. Arch. Allergy Immunol.</i> 101:159-166.
			71.—Trudinger, M., K. Y. Chua, and W. R. Thomas. 1991. cDNA encoding the major dust mite allergen Der f II. <i>Clin. Exp. Allergy</i> 21:33-38.	

Euroglyphus maynei (mite)	Der f 3;	30	G	63. — Smith WA, Thomas WR. 1996. Comparative analysis of the genes encoding group 3 allergens from <i>Dermatophagooides pteronyssinus</i> and <i>Dermatophagooides farinae</i> . <i>Int Arch Allergy Immunol</i> . 109:133-40.
	Der f 10; tropomyosin		G	72. — Aki T, Kodama T, Fujikawa A, Miura K, Shigeta S, Wada T, Jyo T, Mureoka Y, Oka S, Ono K. 1995. Immunochemical characterization of recombinant and native tropomyosins as a new allergen from the house dust mite <i>Dermatophagooides farinae</i> . <i>J Allergy Clin Immunol</i> . 96:74-83.
	Der f 11; paramyosin	98	G	72a
	Der f 14; Mag3; apolipoporphin		G	D17686
	Eur m 14; apolipoporphin	177	G	AF149827
	Lep d 2.0101;	15	G	73. — van Hage Hamsten M., T. Bergman, E. Johansson, B. Persson, H. Jornvall, B. Harfast, and S.G.O. Johansson. 1993. N-terminal amino acid sequence of major allergen of the mite lepidoglyphus destructor (abst). <i>J. Allergy Clin. Immunol.</i> 91:353.
	Lep d 2.0102;	15	G	74. — Varela J, Venegas P, Carreiro J, Barbas JA, Gimenez Gallego G, Polo F. Primary structure of Lep d 1, the main Lepidoglyphus destructor allergen. <i>Eur J Biochem</i> 225:93-98, 1994.
ANIMALS	Bos d 2; Ag3; lipocalin	20	G	75. — Schmidt M, van der Ploeg I, Olsson S, van Hage Hamsten M. The complete cDNA encoding the Lepidoglyphus destructor major allergen Lep d 1. <i>FEBS Lett</i> 370:11-14, 1995.
	Bos d 4; alpha-lactalbumin	14.2	G	75. — Schmidt M, van der Ploeg I, Olsson S, van Hage Hamsten M. The complete cDNA encoding the Lepidoglyphus destructor major allergen Lep d 1. <i>FEBS Lett</i> 370:11-14, 1995.
	Bos d 5; beta-lactoglobulin	18.3	G	X14712
	Bos d 6; serum albumin	67	G	M73993
	Bos d 7;	160	G	77. — Gjesing B, Lowenstein H.
				L42867
				M18780

	immunoglobulin			Immunochemistry of food antigens. Ann Allergy 53:602, 1984.
	Bos d 8; caseins	20-30		77. Gjesing B, Lowenstein H. Immunochemistry of food antigens. Ann Allergy 53:602, 1984.
Canis familiaris (<i>Canis domesticus</i> (dog))	Can f 1;	25	C	78. de Groot, H., K.G.H. Goei, P. van Swieten, and R.C. Aalberse. 1991. Affinity purification of a major and a minor allergen from dog extract: Serologic activity of affinity-purified Can f 1 and Can f 1-depleted extract. J. Allergy Clin. Immunol. 87:1056-1065.
	Can f 2;	27	C	79. Konieczny, A. Personal communication; Immunologic Pharmaceutical Corp.
	Can f 2; albumin		C	78. de Groot, H., K.G.H. Goei, P. van Swieten, and R.C. Aalberse. 1991. Affinity purification of a major and a minor allergen from dog extract: Serologic activity of affinity purified Can f 1 and Can f 1-depleted extract. J. Allergy Clin. Immunol. 87:1056-1065.
Equus caballus (domestic horse)	Equ e 1; lipocalin	25	C	S72946
	Equ e 2; lipocalin	+8.5	P	U70823
				79A. Bulone, V. 1998. Separation of horse dander allergen proteins by two dimensional electrophoresis. Molecular characterisation and identification of Equ e 2.0101 and Equ e 2.0102 as lipocalin proteins. Eur J Biochem 253:202-211.
Felis domesticus (cat saliva)	Fel d 1; cat-l	38	C	79B. Swiss Prot acc: P81216, P81217.
				15. Morgenstern, J.P., I.J. Griffith, A.W. Brauer, B.L. Rogers, J.F. Bond, M.D. Chapman, and M. Kuo. 1991. Amino acid sequence of Fel d 1, the major allergen of the domestic cat: protein sequence analysis and cDNA cloning. Proc. Natl. Acad. Sci. USA 88:9690-9694.
Mus musculus (mouse urine)	Mus m 1; MUP	19	C	80. McDonald, B., M. C. Kuo, J. L. Ohman, and L. J. Rosenwasser. 1988. A 29 amino-acid peptide derived from rat alpha 2 euglobulin triggers murine allergen specific human T cells (abst). J. Allergy Clin. Immunol. 83:251.
				81. Clarke, A. J., P. M. Cissell, R. A. Shaw, P. Beattie, and J. Bishop. 1984. Structure of mouse urinary protein genes: differential splicing configurations in the

				3' non coding region. EMBO J 3:1045-1052.
<i>Rattus norvegicus</i> (rat urine)	Rat n-1	17	C	82.—Longbottom, J. L. 1983. Characterization of allergens from the urines of experimental animals. McMillan Press, London, pp. 525-529.
FUNGI				
<i>Ascomycota</i>				
Dothideales				
<i>Alternaria alternata</i>	Alt-a-1;	28	C	U82633
	Alt-a-2;	25	C	U87807 U87808
	Alt-a-3; heat shock protein	70	C	X78222
	Alt-a-6; ribosomal protein	11	C	U87806
	Alt-a-7; YCP4 protein	22	C	X78225
	Alt-a-10; aldehyde dehydrogenase	53	C	X78227 P42041
	Alt-a-11; enolase	45	C	U82437
	Alt-a-12;acid.ribosomal prot P1	11	C	X84216
	Cla-h-1;	13		83a,83b
	Cla-h-2;	23		83a,83b
<i>Cladosporium herbarum</i>	Cla-h-3; aldehyde dehydrogenase	53	C	X78228
	Cla-h-4; ribosomal protein	11	C	X78223
	Cla-h-5; YCP4 protein	22	C	X78224
	Cla-h-6; enolase	46	C	X78226
	Cla-h-12;acid.ribosomal prot P1	11	C	X85180
Eurotiales				
	Asp-f-13; alkaline serine proteinase	34		84.—Shen, et al. J. Allergy Clin. Immunol. 103:S157, 1999.
<i>Aspergillus Fumigatus</i>	Asp-f-1;	18	C	83784 S39330
	Asp-f-2;	37	C	U56938
	Asp-f-3; peroxisomal protein	19	C	U20722
	Asp-f-4;	30	C	AJ001732
	Asp-f-5; metalloprotease	42	C	Z30424
	Asp-f-6; Mn superoxide	26,5	C	U53561

	dismutase			
Asp f7;	12	G	AJ223315	
Asp f8; ribosomal protein P2	11	G	AJ224333	
Asp f9;	34	G	AJ223327	
Asp f10; aspartic protease	34		XNS092	
Asp f11; peptidyl prolyl isom	24		84A. Crameri R. Epidemiology and molecular basis of the involvement of <i>Aspergillus fumigatus</i> in allergic diseases. Contrib. Microbiol. Vol. 2, Karger, Basel (in press);	
Asp f12; heat shock prot. P70	65	G	U92465	
Asp f13; alkaline serine proteinase	34		84B. Shen, et al. (manuscript submitted), 1999	
Asp f15;	16	G	AJ002026	
Asp f16;	43	G	g3643813	
Asp f17;	34	G	AJ224865	
Asp f18; vacuolar serine	90		84C. Shen HD, Ling WL, Tan MF, Wang SR, Chou H, Han SH. Vacuolar serine proteinase: A major allergen of <i>Aspergillus fumigatus</i> . 10th International Congress of Immunology, Abstract, 1998.	
Asp f2;	55	P	85. Kumar, A., L.V. Reddy, A. Seehanik, and V.P. Kurup. 1993. Isolation and characterization of a recombinant heat shock protein of <i>Aspergillus fumigatus</i> . J. Allergy Clin. Immunol. 91:1024-1030.	
Asp f2;		P	86. Teshima, R., H. Ikebuchi, J. Sawada, S. Miyachi, S. Kitani, M. Iwama, M. Irie, M. Ichinose, and T. Terao. 1993. Isolation and characterization of a major allergenic component (gp55) of <i>Aspergillus fumigatus</i> . J. Allergy Clin. Immunol. 92:698-706.	
<i>Aspergillus niger</i>	Asp n14; beta xylosidase	105	G	AF108944
	Asp n18;	34	G	84B. Shen, et al. (manuscript submitted), 1999
	vacuolar serine proteinase			
	Asp n2;	85	G	Z84377
<i>Aspergillus oryzae</i>	Asp o2; TAKA amylase A	53	G	D00434 M33218
	Asp o13; alkaline serine proteinase	34	G	X17564
<i>Penicillium brevicompactum</i>	Pen b13; alkaline serine Proteinase	33		86A. Shen HD, Lin WL, Tsai JJ, Liaw SF, Han SH. 1996. Allergenic components in three different species of <i>Penicillium</i> : crossreactivity among major allergens. Clin Exp Allergy 26:444-451.
<i>Penicillium</i>	Pen c1; heat shock protein P70	70	G	U64207

eitrinum	Pen e 3; peroxisomal membrane			86B. Shen, et al. Abstract; The XVIII Congress of the European Academy of Allergology and Clinical Immunology, Brussels, Belgium, 3-7 July 1999.
	protein			
	Pen e 13; alkaline serine proteinase	33		86A. Shen HD, Lin WL, Tsai JJ, Liaw SF, Han SH. 1996. Allergenic components in three different species of <i>Penicillium</i> : crossreactivity among major allergens. <i>Clin Exp Allergy</i> 26:444-451.
Penicillium notatum	Pen n 1; N-acetyl glucosaminidase	68		87. —Shen HD, Liaw SF, Lin WL, Ro LH, Yang HL, Han SH. 1995. Molecular cloning of cDNA coding for the 68 kDa allergen of <i>Penicillium notatum</i> using MoAbs. <i>Clin Exp Allergy</i> 25:350-356.
	Pen n 13; alkaline serine proteinase	34		89. —Shen, et al. <i>Clin. Exp. Allergy</i> (in press), 1999.
	Pen n 18; vacuolar serine proteinase	32		89. —Shen, et al. <i>Clin. Exp. Allergy</i> (in press), 1999.
	Pen n 18; vacuolar serine proteinase	34		89. —Shen, et al. <i>Clin. Exp. Allergy</i> (in press), 1999.
Onygenales				
Trichophyton rubrum	Tri r 2;		G	90. —Woodfolk JA, Wheatley LM, Piyasena RV, Benjamin DC, Platts Mills TA. 1998. Trichophyton antigens associated with IgE antibodies and delayed type hypersensitivity. Sequence homology to two families of serine proteinases. <i>J Biol Chem</i> 273:29489-96.
	Tri r 4; serine protease-		G	90. —Woodfolk JA, Wheatley LM, Piyasena RV, Benjamin DC, Platts Mills TA. 1998. Trichophyton antigens associated with IgE antibodies and delayed type hypersensitivity. Sequence homology to two families of serine proteinases. <i>J Biol Chem</i> 273:29489-96.
Trichophyton tonsurans	Tri t 1;	30	P	91. —Deuell, D., L.K. Arruda, M.L. Hayden, M.D. Chapman and T.A.E. Platts Mills. 1991. <i>Trichophyton tonsurans</i> Allergen I. <i>J. Immunol.</i> 147:96-101.
	Tri t 4; serine protease	83	G	90. —Woodfolk JA, Wheatley LM, Piyasena RV, Benjamin DC, Platts Mills TA. 1998. Trichophyton antigens associated with IgE antibodies and delayed type hypersensitivity. Sequence homology to two families of serine proteinases. <i>J Biol Chem</i> 273:29489-96.
Saccharomycetales				
Candida albicans	Cand a 1	40	G	88. Shen, H.D., K.B. Choo, H.H. Lee, J.C. Hsieh, and S.H. Han. 1991. The 40 kd allergen of <i>Candida albicans</i> is an alcohol dehydrogenase: molecular cloning and immunological analysis using monoclonal antibodies. <i>Clin. Exp. Allergy</i> 21:675-681.
Candida boidinii	Cand b 2	20	G	J04984,

				J04985
<i>Basidiomycota</i>				
<i>Basidioleiomycetes</i>				
<i>Malassezia furfur</i>	Mal f 1;			91A. Schmidt M, Zargari A, Holt P, Lindblom L, Hellman U, Whitley P, van der Ploeg I, Harfast B, Scheynius A. 1997. The complete cDNA sequence and expression of the first major allergenic protein of <i>Malassezia furfur</i> , Mal f 1. <i>Eur J Biochem</i> 246:181-185.
	Mal f 2; MF1 peroxisomal membrane protein	24	G	AB011804
	Mal f 3; MF2 peroxisomal membrane protein	20	G	AB011805
	Mal f 4;	35	G	Takesako, p.e.
	Mal f 5;	18*	G	AJ011955
	Mal f 6; cyclophilin homologue	47*	G	AJ011956
<i>Basidiomycetes</i>				
<i>Psilocybe cubensis</i>	Psi e 1;	16		91B. Horner WE, Reese G, Lehrer SB. 1995. Identification of the allergen Psi e 2 from the basidiomycete <i>Psilocybe cubensis</i> as a fungal cyclophilin. <i>Int Arch Allergy Immunol</i> 107:298-300.
	Psi e 2; cyclophilin—			
<i>Coprinus comatus</i> (shaggy cap)	Cop e 1;	44	G	AJ132235
	Cop e 2;			
	Cop e 3;			Brander, p.e.
	Cop e 5;			Brander, p.e.
	Cop e 7;			Brander, p.e.
INSECTS				
<i>Aedes aegyptii</i> (mosquito)	Aed a 1; apyrase	68	G	L12389
	Aed a 2;	37	G	M33157
<i>Apis mellifera</i> (honey-bee)	Api m 1; phospholipase A2	16	G	92.—Kuehler, K., M. Gmachi, M. J. Sippl, and G. Kreil. 1989. Analysis of the cDNA for phospholipase A2 from honey-bee venom glands: The deduced amino acid sequence reveals homology to the corresponding vertebrate enzymes. <i>Eur. J. Biochem.</i> 184:249-254.
	Api m 2; hyaluronidase	44	G	93.—Gmachi, M., and G. Kreil. 1993. Bee venom hyaluronidase is homologous to a membrane protein of mammalian sperm. <i>Proc. Natl. Acad. Sci. USA</i> 90:3569-3573.
	Api m 4; melittin	3	G	94.—Habermann, E. 1972. Bee and wasp venoms. <i>Science</i> 177:314-322.
	Api m 6;	7-8	P	Kettner, p.e.
	Bom p 1; phospholipase	16	P	95.—Jacobson, R.S., and D.R. Hoffman. 1993. Characterization of bumblebee venom
<i>Bombus pennsylvanicus</i>				

(bumble bee)			allergens (abst). J. Allergy Clin. Immunol. 91:187.
	Bom-p 4; protease	P	95. Jacobson, R.S., and D.R. Hoffman. 1993. Characterization of bumblebee venom allergens (abst). J. Allergy Clin. Immunol. 91:187.
Blattella germanica (German cockroach)	Bla g 1; Bd90k	G	96. Arruda LK, Vailes LD, Mann BJ, Shannon J, Fox JW, Vedvick TS, Hayden ML, Chapman MD. Molecular cloning of a major cockroach (Blattella germanica) allergen, Bla g 2. Sequence homology to the aspartic proteases. J Biol Chem 270:19563-19568, 1995.
	Bla g 2; aspartic protease	36	G
	Bla g 4; calycin	21	G
	Bla g 5; glutathione transf.	22	G
	Bla g 6; troponin C	27	G
	Per a 1; Cr-PH	72-78	G
Periplaneta americana (American cockroach)	Per a 3; Cr-PI	G	98A. Wu CH, Lee MF, Liao SC. 1995. Isolation and preliminary characterization of cDNA encoding American cockroach allergens. J Allergy Clin Immunol 96: 352-9.
	Per a 7; tropomyosin	37	G
Chironomus thummi-thummi (midges)	Chi t 1.0; hemoglobin	16	G
	Chi t 1.01; component III	16	G
	Chi t 1.02; component IV	16	G
	Chi t 2.0101; component I	16	G
	Chi t 2.0102; component IA-	16	G
	Chi t 3; component II-beta	16	G
	Chi t 4; component IIIA	16	G
			P02229
			P02230
			P02221
			P02221
			P02222
			P02231